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Sealift

MAGAZINE OF THE MILITARY SEALIFT COMMAND

SEPTEMBER 1977

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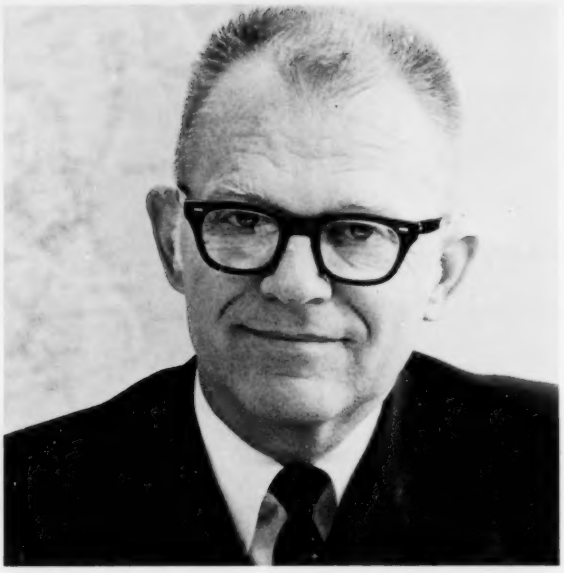


Wanted: Your Ideas

As I visit MSC units, ships and staff offices and call on commanders of the military units we serve, I am becoming increasingly aware of the challenges and problems we face today and in the years ahead.

Providing training and retaining the highly skilled and dedicated work force we need is a major challenge. Another is the sizing and configuration of our fleet for the next decade. Strengthening of Navy sealift readiness posture is primarily an MSC responsibility and our growing role in fleet support and special project operations is another concern we share. In all that we do we must keep our sights on two primary objectives, maintaining our ability to respond to a non-mobilization emergency while simultaneously improving the capability to provide logistical support for forces that may be deployed in a wartime situation.

All of these are responsibilities we share. The MSC controlled fleet is OUR fleet. The missions that are assigned the command are OUR responsibilities. The success we achieve will be the result of OUR efforts.

Within MSC there is a tremendous reservoir of brainpower fueled by years of experience. But that asset is wasted if not used to the fullest possible extent. I intend to do all that I can to reap positive advantages from your expertise.

I have always been a firm believer that every member of an organization has the potential to contribute ideas and solutions to problems. This potential is by no means the sole property of older, experienced command members since many of our best ideas come from the fresh, inquiring minds of our younger employees. Everyone should and must have a voice, and his voice must be heard.

There are other blocks which at times discourage innovative thinking and constructive expression in addition to the "old timers only" syndrome. Specialization also erects barriers between groupings of people, each of which is expert in its own field.

Specialization has had its impact on MSC. Some MSC units are primarily concerned with sea transportation. Others are more directly involved in fleet support operations or with the requirements stemming from our special project missions. These are closely related areas since all involve ship operations. But, each has its own unique problems, different challenges, and even its specific language.

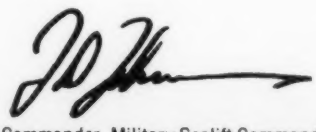
Obviously, it makes good sense to assign people with specialized knowledge to ships or units where that type of expertise is most needed. The result is higher productivity. We can do more at less cost with greater efficiency because we have concentrated specialized human skills where needed.

But specialization, or departmentalization, can have a negative impact on people. If our expertise is limited, we may hesitate to accept new challenges because we lack confidence in our abilities to handle a different type of assignment. We may be reluctant to volunteer opinions in matters that do not directly relate to our own experience.

What can be done to broaden the work experience of MSC people? How can we improve the flow of information throughout the command so that all of us are more aware of the total range of problems and challenges we face? General George Patton once said, "Don't tell a man how to do a thing. Tell him what you want done and he'll surprise you by his ingenuity."

I believe in that philosophy and because I do I would like to solicit your suggestions concerning ways to improve communication among all elements of the command, including reserve units. I also would like your suggestions as to how we can broaden the training and experience of our people.

To make certain your suggestions are carefully reviewed, and that each contributor is eligible for awards for the ideas that are adopted, I would request that suggestions be submitted through the already established Beneficial Suggestion Program. Thus, when they reach my desk I will have both the benefit of your own ideas and the comments of those who review them—on ship, in an MSC office, and at the area command. You can be assured each will be given careful consideration, and I look forward to receiving your recommendations.



Commander, Military Sealift Command

Photo by Louis Panarale

COVER: USNS Comet sails under the Verrazano Narrows Bridge near Bayonne, N.J. and out to sea for a rendezvous with a convoy for Europe, all part of Reforger '77. Story on Page 4.

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Features:

Reforger '77

Two MSC controlled roll-on, roll-off ships again take part in NATO Reforger exercise.

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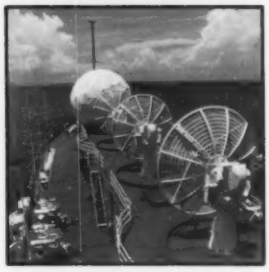

Poseidon Launch

USNS Range Sentinel plays major role in the Navy's deterrent mission.

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A study suggests there is a safe and economical way to deliver Alaskan oil to the U.S. East Coast.

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Callaghan, Comet Support Reforger '77

Photos by Louis Panarale and
PHC John Francavillo

An Army stevedore signals for a truck to be moved into a position for securing inside the USNS Comet.

The Military Sealift Command chartered roll-on, roll-off ships Adm. William Callaghan and USNS Comet participated in a simulated wartime convoy last month as part of an annual mobility exercise—Reforger '77.

On August 12 and 13 the bulk of 37,000 measurement tons of Army equipment was loaded aboard Callaghan and Comet at the Military Ocean Terminal in Bayonne, N.J. Equipment from various Army units had been moved to the terminal by rail and truck beginning July 27 for loading aboard the two MSC controlled ships.

Involved in the Reforger deployment were major elements of the 1st Infantry Division, Ft. Riley, Kan.; the 4th Mechanized Infantry Division, Ft. Carson, Colo.; the 3rd Armored Cavalry Regiment, Ft. Bliss, Texas; a Ranger battalion from Fort Lewis, Wash.; elements of the Army National Guard and Reserve, and two squadrons of the 49th Tactical Fighter Wing, Holloman Air Force Base, New Mexico.

Most of the 12,500 U.S. troops involved in Reforger were transported from various U.S. Air Force bases by Military Airlift Command C-141 Starlifters and C-5 Galaxies which delivered them to military bases and civil airports in Germany, Holland, Belgium and Luxembourg.

In addition to the airlift of troops, the Air Force flew fighter planes to Europe, refueling them enroute.

Following their deployment, tactical air crews combined with Army troops and other units already based in Europe as part of the NATO force to conduct a series of field ex-

ercises. The exercises involved a number of NATO nations—as did the convoy operation which tested U.S. and Allied nation sea control capabilites.

Callaghan and Comet carried 292 M-60 tanks, the Army's main battle tank, and armored personnel carriers plus 575 trucks and other wheeled vehicles. The two ships departed Bayonne August 16 and arrived at Amsterdam, Netherlands and Ghent, Belgium respectively on August 31.

Reforger '77 teamed airlift and sealift mobility forces for the second consecutive year.

Reforger exercises test and refine U.S. ability to move forces quickly and explore ways to improve transportation and supply systems between NATO nations.

Other purposes of the exercises are to evaluate the need for standardization of doctrine, procedures, equipment and armament of NATO forces, and to exercise communication and command and control procedures.

During the passage to Europe, the

Two days before sailing, officers on the Callaghan go over their charts for the convoy operations.

Navy officers check placement of tanks aboard USNS Comet.

Military equipment fills the Military Ocean Terminal dock where Comet is berthed for loading.

Naval Control of Shipping Organization, composed primarily of Naval Reserve units, fulfilled convoy control responsibilities as they would in a national emergency. They also prepared sail orders for the convoy.

U.S. combatant ships and NATO sea forces also took part in convoy operations, marking the first time that U.S. Navy and NATO sea forces have had an active role in Reforger.

Two Naval Reservists sailed on each ship, one officer and a signalman. They are Cmdr. Jerome K. Tankel and Signalman Second Class Lester J. Hicks, both of the Naval Control of Shipping Organization Convoy Command Spain-Guantanamo Unit 206, of Alexandria, Va; Cmdr. Charles E. Hoffman, Naval Control of Shipping Miami-Belgium 206, of Washington, D.C., and Signalman First Class Robert J. Hammond, of Submarine Unit USS Gilmore, Detachment 504, Philadelphia.

While in convoy the Callaghan and Comet were escorted by U.S. Navy and NATO combatant ships and opposed by "enemy" submarines and surface ships attempting to break the screen of protecting Allied ships.

Four MSC government owned and chartered ships took part in Reforger '76, the first time since 1964 that MSC controlled ships were involved in an exercise of this type. Callaghan, USNS Meteor, Comet and SS American Ranger transported 348 helicopters, 2,060 vehicles and 259 equipment-filled containers to European ports last year.

The SS Washington originally was intended to be the second ship in the sealift portion of Reforger but mechanical problems necessitated use of the USNS Comet. Washington, formerly operated by Seatrain Lines, was to be withdrawn from the National Defense Reserve Fleet for use in the exercise.

The Comet is a Civil Service crewed roll-on, roll-off ship operated by MSC since 1958. The 500-foot-long ship is a prototype ro-ro designed by military and maritime industry naval architects for the specific purpose of carrying wheeled and tracked vehicles.

The gas turbine ship Callaghan was built in 1967 and was the first cargo vessel propelled by aircraft type gas turbine engines. Callaghan set a world's record for an eastbound freighter averaging 25.66 knots between Philadelphia and Bremerhaven in seven days, 22 hours in March 1968.

American Export Lines operates the Callaghan for MSC.

On completion of field training, Army troops will be redeployed to the United States. The Callaghan will depart Bremerhaven October 12 and return to Bayonne October 19. The Comet or S S Washington will leave Rotterdam October 12, arriving in the United States in late October. ⚓

It's Convoy Duty Again For Reforger Skippers

By Louis Panarale

Looking at the two men, hearing them talk, and observing their mannerisms and physical appearance, Sven Rydberg and George Miller seem as different as two men can be. One, Rydberg, is a Navy employee, a Civil Service mariner. The other is an employee of a civilian shipping company, American Export Lines. Yet, they are cut from the same maritime cloth.

Rydberg is a slightly built man who speaks softly with a Swedish accent. Except for time off for home leaves, he has been master of Military Sealift Command (MSC), Atlantic's roll-on, roll-off ship USNS Comet since 1972.

Miller is robust with a stocky build and a voice that matches his physique. This year he took command of the chartered roll-on, roll-off gas turbine ship Adm. William M. Callaghan, used by MSC, Atlantic for point-to-point transportation of wheeled and tracked vehicles.

Rydberg and Miller both began their careers at sea in 1935. Rydberg started as a deck cadet in his late teens under a maritime program in his native Sweden. Miller was one of the first to join the U.S. Cadet Corps which would later be associated with the U.S. Merchant Marine Academy, Kings Point, N.Y.

During World War II both men served as officers aboard convoy ships. Rydberg saw duty in the Atlantic, off the Soviet coast and around Africa, working for several steamship companies. Miller sailed

MSC Atlantic Commander Capt. Herman Fritzke (left) and Assistant Chief of Staff for Operations and Planning Capt. Robert Richards (center) meet with Capt. Sven Rydberg aboard Comet.

MSC Commander Rear Adm. John D. Johnson looks over loading plans at the Military Ocean Terminal with Brig. Gen. William Sarber, commander of Military Traffic Management Command, Eastern Area.

convoys in the South Pacific and Europe and took part in the invasions of Okinawa and Normandy.

On a muggy and overcast mid-August day this summer Rydberg and Miller each stood on the bridge of his ship berthed at the Military Ocean Terminal, Bayonne, N.J. As dawn broke around 5:45 a.m., tugs guided the Comet and Callaghan out to sea.

It was a scene reminiscent of the heydays of World War II, a scene familiar to both ship masters. First the Callaghan and then the Comet, under their own power, passed under the Verrazano Narrows Bridge. The two ships, carrying 37,000 measurement tons of Army vehicles, tanks and other vehicles, were sailing under simulated wartime conditions.

The equipment belonged to the Army's 1st Infantry Division, Fort Riley, Kansas, and the 4th Mechanized Infantry Division, Fort Carson, Colo.

It would be unloaded and deployed in Belgium and the Netherlands for use in a series of mobility exercises involving nearly 12,500 U.S. troops. This is the second consecutive year in which airlift and sealift mobility forces joined to support the lift part of the exercise which is labeled Reforger '77,

The troops were transported from various U.S. Air Force bases by Military Airlift Command C-141 Starlifters and C-5 Galaxies to Germany, Holland, Belgium and Luxembourg, joining units already in Europe to participate in the exercises with troops of other NATO countries.

Movement of the military equipment to air and sea embarkation points was the responsibility of the Army's Military Traffic Management Command. MSC's delivery of equipment and Military Airlift Command lift of troops brought into play all three of the Department of Defense's transportation operating agencies.

While in convoy the Callaghan and Comet were escorted by U.S. Navy and NATO combatant ships and opposed by "enemy" submarines, surface ships and aircraft attempting to break the screen of protecting Allied ships.

Participation by U.S. and NATO Navy forces in the convoy portion of the exercise added a new dimension to the annual Reforger exercise. With escort units of a destroyer squadron accompanying Comet and Callaghan, the exercise had all the elements of a wartime emergency.

In an exercise like Reforger '77, the wartime atmosphere did not begin at sea. For MSC the exercise was already in full swing with the first arrival of Army equipment at Bayonne.

For two days vehicles rumbled up the ramps of the Callaghan and Comet as stevedores and crewmen labored in the stifling heat and sometimes rainy weather. The engine roar of heavy tanks and other tracked vehicles was loud, almost ear-splitting as the vehicles rolled through the side ports of the ships.

Miller sat in his cabin on the Callaghan above the noise and activity, taking a short break from a busy routine. This was Miller's first participation in a Reforger exercise, but getting ready for a convoy operation was nothing new to him.

"I once made a count of the convoys I was involved in during World War II and I think there were 19 of them," Miller said.

Since 1949 Miller has served in various capacities with American Export Lines, as master of some of the line's most technically advanced container vessels and as a company agent in India and Italy.

Before sailing on the Reforger '77 mission, Miller commented on the loading operations at the Military Ocean Terminal. "I must give credit to the Army and civilian stevedores. They have done an excellent stowage job for Reforger '77."

Miller said speed of ships is the major change that would be evident in future convoys. He pointed out that the Callaghan's gas turbojet engines are designed for speeds in excess of 25 knots.

"Anybody who runs this ship has a real job on his hands. It's a lot of ship," Miller said. "But I have faith

in my men, especially the engineers who are extremely skilled in handling the gas turbine engines."

American Export Lines operates the Callaghan which is under MSC control. Built in 1967, Callaghan set the world's record the next year, averaging 25.66 knots between Philadelphia and Bremerhaven, Germany, making the trip in seven days, 22 hours.

If Rydberg and Miller have different demeanors and appearances, so have the ships they command.

The 692-foot Callaghan dwarfs the 499-foot Comet. But like the Callaghan, the Comet was designed and built with specific purposes in mind.

In 1957 Comet was the first of her kind constructed from the keel up as a roll-on, roll-off carrier. She carries a complement of 16 officers and 34 Civil Service unlicensed crewmen and is capable of doing 18 knots.

Rydberg spoke of the Comet with intense pride. "I have been with this ship since 1972. I sailed her to Vietnam where we delivered armored vehicles. I know what she can do," he said.

Rydberg served in his first convoy in 1939. None of the merchant ships he served on were sunk. "But we encountered enemy submarines from

Standing on the bridge wing of the Callaghan, Admiral Johnson, Captain Miller, General Sarber and Captain Fritzke get an overview of military equipment loaded on the decks.

An Army vehicle is hoisted aboard Comet.

Army tanks crowd the Callaghan stern.

Powered by its gas turbine engines, Callaghan is headed for Europe.

time to time," said Rydberg, who through the years has sailed in ships flying Swedish, Panamanian, Belgian and American flags.

"During the war, living conditions were rough aboard the ships and we worked long hours," he said. "But I gained a lot of experience from those convoy missions."

Rydberg feels the participation of U.S. and Navy forces in the convoy portion of Reforger '77 will be of great value to all hands at sea, especially the merchant seamen who have never sailed in a convoy under simulated wartime conditions.

Two days before the Callaghan and Comet departed for Europe, Rydberg and Miller met with Army and Navy officers, captains of the escort vessels for a pre-sail conference at MSC, Atlantic.

The two-hour conference allowed everyone involved in the at-sea stage of Reforger '77 to hash out any questions they had regarding communications, routings and convoy formation patterns.

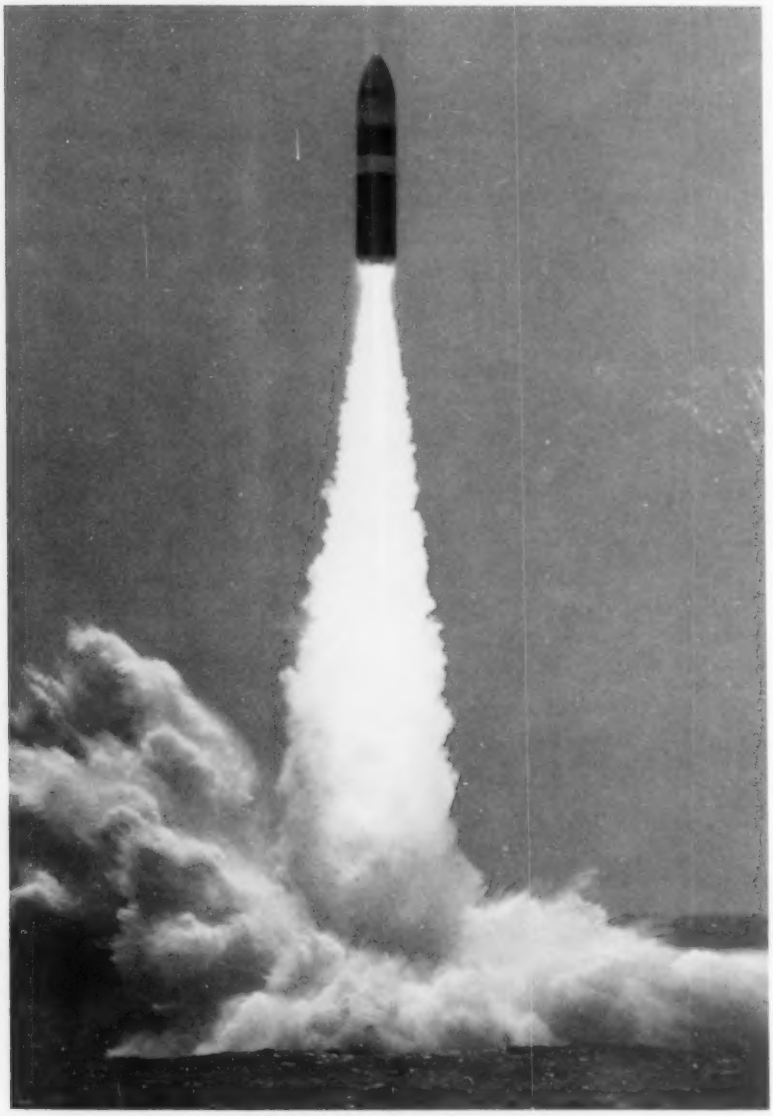
When the conference ended, Rydberg and Miller shook hands and made plans to meet again before the ships departed for Europe.

They did meet. And on Tuesday morning, August 16, George Miller and Sven Rydberg did what they had done so many times in the war. They sailed in convoy across the Atlantic. ⚓

Laden with Army equipment, Comet gets under way in the early morning hours.

USNS Range Sentinel On Poseidon Mission

By Louis R. Granger



A Poseidon rises from the water with a roar, launched from the submarine USS James Monroe.

The countdown had begun and when the announcer reached "one, blastoff" there was a silence. But while my nervous system was telling me something had gone wrong, the sea 2,000 yards off the port side of the USNS Range Sentinel burst open with a roar.

Rising out of the Atlantic 30 miles off Cape Canaveral was one of the most devastating weapons of the 20th century—the Navy's Poseidon C-3 nuclear missile.

Launched from the nuclear submarine USS James Monroe on August 3, the Poseidon, lacking its nuclear warheads, rose straight up trailing a white tail of smoke from its solid fuel propellent.

The 34-foot two-stage Poseidon test missile was the 65th fired from ships and submarines since Poseidon test launches began in August 1968.

The USNS Range Sentinel is under the operational control of Military Sealift Command, Atlantic and the MSC office at Patrick Air Force Base, just south of Cape Canaveral. Commanding officer of the MSC office is Cmdr. Charles Rowland.

Commanded by Capt. Jesse H. McCandless, the Range Sentinel supports the Navy's fleet ballistic missile (FBM) program.

Crewmen who operate the ship are Civil Service mariners employed by MSC. In addition to the 69 seamen required to operate the ship, 36 Navy men of FBM Operational Test Support Unit Two direct test operations and operate and maintain the ship's instrumentation complex. Unit Two commanding officer is Cmdr. Richard S. Sorensen.

Primary mission of the Range

Sentinel and Unit Two is to provide communications, flight safety and telemetry data collection in support of the FBM flight tests in broad ocean areas.

A second mission is to serve as a support ship for Poseidon submarine demonstration and shakedown operations known as DASO. This was the mission the ship was on August 3.

Purposes of that mission were combined technical and operational evaluation of the nuclear submarine's system, training of the submarine crew in weapon system casualty procedures and missile firing, to determine adequacy of the prescribed technical procedures and to demonstrate the serviceability and safety of the weapon system.

The James Monroe was commissioned in December 1963 as the 15th fleet ballistic missile submarine. After 35 patrols carrying Polaris missiles, the submarine returned to her original home at Newport News Shipbuilding and Dry Dock Co. for nuclear refueling and conversion to a Poseidon missile submarine.

The conversion was completed in May 1977 and until the August 3 demonstration and shakedown the crew had been training for their role as part of the Navy's deterrent force.

The first submerged launch of a Poseidon was successfully conducted from the USS James Madison on Aug. 3, 1970—exactly seven years from this year's August launch.

The demonstration and shakedown operation began in October 1970 with a launch from the Madison. The following October the USS Sherburne, a high speed troop transport built in 1944, was decommissioned, modified, turned over to Military Sealift Command and renamed USNS Range Sentinel.

During its conversion to a range instrumentation vessel, several special features were added including a communications system to provide all needed interior and exterior communications. Large radar discs on the forward part of the ship are part of that system.

Special systems were included to allow the ship to use the latest developments in satellite navigation as well as underwater systems for tracking and communication with submarines.

Although the actual launch was a one-day affair with up to 300 guests aboard the ship, it takes from 15 to 19 days to prepare for it.

After a submarine is outfitted with Poseidon capability, crew training begins, including five days of at-sea tactical exercises.

Launch communications rehearsals are held in port and there is a one-day dress rehearsal at sea two days before the actual launch. The day before the big event technicians install the destruct mechanism aboard the Range Sentinel.

During the Monroe's dress rehearsal on August 1, presidential aide Zbigniew Brzezinski was aboard the submarine for the nine-hour inspection cruise.

Accompanying Mr. Brzezinski was Adm. Hyman Rickover who is considered the father of the nuclear submarine. Admiral Rickover escorted President Jimmy Carter on a similar voyage last May aboard the attack submarine USS Los Angeles.

The August 3 demonstration began with harbor tugs moving the

The flight safety console contains a missile destruct system in case a missile goes off course. Lt. Glen Dilgren (foreground) is certified to destroy a missile. James Coats (background) is an instructor for Interstate Electronics Corp. which built the equipment.

M2 Billy Johnston tunes in
nternal communications
board Range Sentinel.

Aboard for the August 3 shoot are (left to right): Capt. Herman E. Fritzke, commander MSC, Atlantic; Capt. Jesse H. McCandless, Range Sentinel master, and Cmdr. Charles M. Rowland, commanding officer, MSC Office, Port Canaveral.

Monroe from the pier. The submarine then proceeded to the launch area where it submerged below periscope depth. Still visible, however, was the communications antenna.

Below periscope depth the submarine was blind and relied on those aboard the Range Sentinel to be its eyes.

On the way to the launch area the Range Sentinel stays off the Submarine's starboard quarter to allow the Portable Ship's Instrumentation Package (POSIP) to receive the submarine's radio signals.

The van containing the instrumentation gear is on the Range Sentinel's port side so that signals between ship and sub are not interrupted by the Sentinel's large radar discs.

Lt. Cmdr. William Bates, test director and test operations division officer, explained that the ship's civilian and military crews also must insure that no vessel gets in the way of the shoot, or between the ship and submarine. The Range Sentinel also must be kept in the proper position for documentary type photography taken during every test launch.

Should the missile go off track or wobble on leaving the water photographs might help identify the problem.

During the August 3 demonstration two sailboats were in the area and there was a possibility of their delaying the firing. But they moved on and the shoot was on schedule.

Had a sailboat or any other vessel headed towards the submarine the Range Sentinel would have moved between the sub and the oncoming vessel to keep it from running down the communications mast.

The actual countdown takes place aboard the submarine and is transmitted to the Range Sentinel technicians who in turn retransmit it to Air Force trackers at Cape Canaveral.

Once the missile has been launched, Unit Two technicians track its flight for 15 seconds at which time the tracking is taken over from the Cape.

One of the functions of Unit Two is to operate the Operational Test Instrumentation System—an electronics complex which detects, tracks, processes telemetry signals and monitors missile performance for range safety. It also has a capability to destroy the missile. The system allows the tactical command

The Range Sentinel is equipped with four radar discs for missile tracking. The forward one is encased in a protective covering. On deck at left are cameras to record missile firing.

Crewmen remove mooring lines from the nuclear sub James Monroe before joining the Range Sentinel for its first Poseidon missile shoot.

The first Trident missile is launched from Cape Canaveral on Jan. 18, 1977.

officer to control the ship's operation in support of the mission.

With final shakedown completed, the James Monroe became the 28th Polaris submarine to be equipped with the larger Poseidon missile.

A total of 31 of the fleet's 41 FBM submarines will carry the Poseidon missiles.

Poseidon's increased size and advanced design gives it increased payload and improved accuracy. Poseidon was the first fleet ballistic missile to be equipped with multiple warheads that could be directed to independent targets.

The last Poseidon conversion is expected to be completed by the end of the year. Meanwhile, the longer range Trident missile is being tested at the Air Force Eastern Test Range at Cape Canaveral and is expected to become operational late next year.

The first of the proposed Trident nuclear submarines is expected to be delivered to the Navy in October 1979, six months later than originally scheduled.

Under construction by the Electric Boat Division of General Dynamics, follow-on ships can be expected to slip somewhat less and the program could be back on contract schedule with the sixth submarine.

The company said the delay is the result of construction manning and production problems at the shipyard at Groton, Conn.

Trident submarines will be the largest undersea craft yet constructed by any nation, including the 500-foot-long Soviet Delta class missile submarine.

Tridents will be 560 feet long, 105 feet longer than the Range Sentinel, and will carry 24 Trident missiles compared to the 16 missiles now carried by the Poseidon subs. Like the Poseidon missile, the Trident will be equipped with multiple, independently targeted nuclear warheads. ⚓

Submarine Tanker Proposed To Deliver Alaskan Oil

By Louis Panarale

History points out that there was opposition, even scornful laughter, when it was first suggested that aircraft could be used as weapon systems or to deliver assault troops. The same was true when it was proposed that tanks be used in warfare. Even the introduction of the machine gun was opposed by defenders of the status quo.

As innovative as man has been, there are always those who claim that if man had been intended to fly he would have been given wings. And, despite a number of recommendations that vessels be developed to carry cargo under the sea, no real progress has been made toward development of such vehicles.

It could be that they never will be developed, but a recent study by a team of industrial companies suggests that it is possible and perhaps feasible to deliver Alaskan oil to the U.S. East Coast in a fleet of nuclear submarine tankers.

Even if such a system is never developed, the study provides a logical and rational basis for deci-

sions that have to be made if the transportation industry is to continue to be innovative, productive, economical and reliable.

The study was under the direction of the U.S. Maritime Administration and was carried out by an industry team composed of Newport News Shipbuilding; Westinghouse Electric Corp.; Bechtel, Inc., and Mobil Shipping and Transportation Co.

The study proposed a submarine tanker and a transportation system to deliver crude oil from the Arctic region to the East Coast of the United States by way of the Arctic Ocean.

Conceptual ship design was limited to the nuclear submarine tanker. The study included a limited analysis of Arctic oil sources. For purposes of economic comparison with submarine system designs, it considered existing and proposed non-submarine delivery systems.

"Large nuclear powered submarine tanker systems to deliver Arctic oil to the U.S. East Coast are technically feasible now," the study team reported in its conclusions. "They are superior to other marine systems and pipeline systems examined in this study."

The report also concluded that the submarine tanker system offers an attractive rate of return, comparing favorably with other delivery systems in terms of transportation costs.

"Why hasn't the Arctic submarine tanker system been previously implemented?," the study queried. "Presumably because its technical feasibility and economic viability have not been apparent to prospective users.

"Compared with pipelines and surface tankers (even Arctic pipelines and icebreaking surface tankers) the submarine has been looked upon as being 'unnatural'. In reality, its characteristics are uniquely compatible with the Arctic environment.

The study team felt the Arctic route was the only feasible one for safety and scheduling. The route also provides what the study called "freedom from foreign jurisdiction" because there would be no transshipping at foreign ports.

The report suggested use of two submarines at the opening stage of the transport system with additional submarines coming into service at three-month intervals.

The configuration proposed was selected from a study of submarines ranging from 100,000 to 900,000 tons submerged displacement.

The selected configuration would carry a maximum of 2.1 million barrels of cargo. Space between the outer hull and the pressure hulls would be filled either with cargo or salt water ballast.

Tank spaces inside the pressure hulls would contain liquids or be empty, depending on the density of the liquid carried. All dirty ballast water would be pumped ashore at the northern terminal for treatment to limit pollution of the ocean.

A rectangular hull form was selected to permit the vessel to operate in shallow water during an overhaul. Its draft would be 28 feet as compared to 53 feet for a circular hull.

The submarine would be controlled at high speed by a centerline rudder and by stern flaps which would act as planes. It would be controlled at low speed by four 500 horse power retractable thrusters and by changing ballast.

There would be a retractable conning tower for surface operation and a retractable snorkel mast. Both of these could be extended through the ice in an emergency.

Two specially trained crews would rotate once a month on each submarine tanker. Sophisticated navigation systems and computer controlled maneuvering systems would be used for operations under ice and at the terminals.

A docking recess would permit mating with undersea docks for cargo, stores and personnel transfer, or with another submarine for rescue and salvage.

A nuclear steam generator would provide the power. All the elements of the generator would be housed within a containment vessel surrounded by a concrete biological shield.

The nuclear generator would be much like those already used on nuclear surface ships.

Because of the tracks the tankers would follow along the Arctic region, the nuclear submarine tanker would have to operate under the polar ice cap part of the time.

Tankers would normally operate from terminal to terminal at 20 knots within corridors 200 feet high and six miles wide. Northbound and southbound corridors would be separated by at least 10 miles and located in deep water well clear of islands, heavy surface traffic and other obstructions.

Multiple sonar units would provide for obstacle avoidance. One long range sonar would constantly scan the corridor for such things as icebergs or military submarines. A continuous record would be made of ice thicknesses so that the tanker could surface in a thin ice area in an emergency.

The study team reported that docking and undocking operations at the submerged terminals are essentially unaffected by weather and ice conditions at the surface.

There would be a controlled area at each terminal, extending 20 miles to seaward from the terminal docks. Only one ship at a time would be in motion in this area, with arrivals and departures scheduled to meet this restriction.

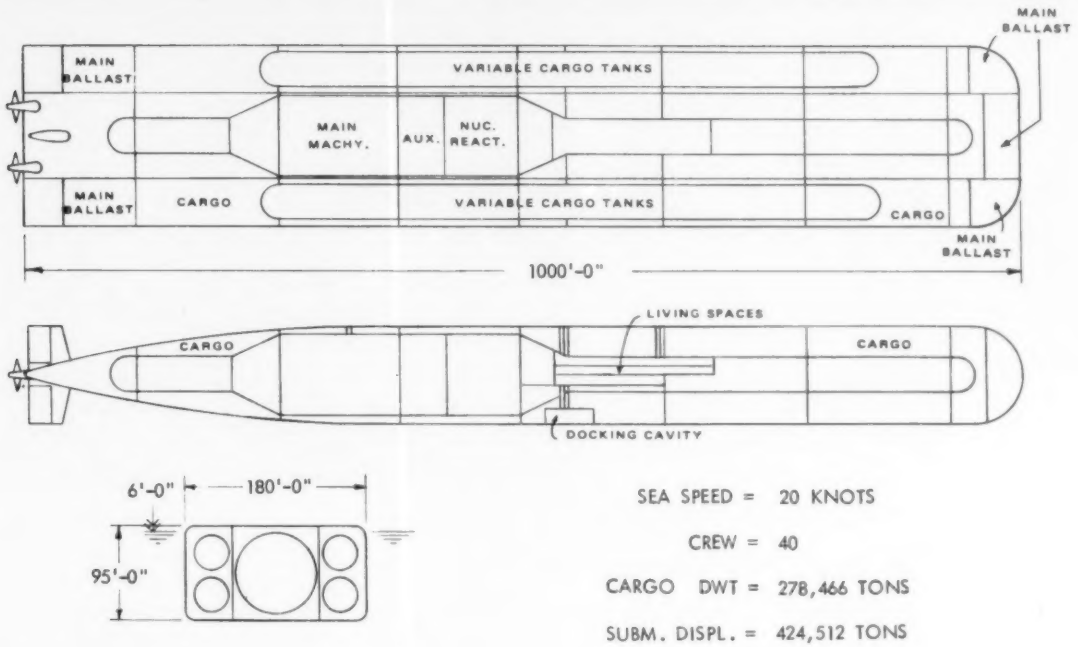
The following scenario explains how undersea docking operations would work.

A submarine tanker enters the controlled area and starts a computer controlled docking sequence which adjusts speed, depth and heading. The computer brings the sub to a stop directly above the selected terminal dock.

The ship's position is determined by sensors mounted throughout the bottom of the controlled area. By using these sensors and closed circuit television at the docks, the ship's position can be plotted within inches.

Once the ship is positioned over the dock, ballast water is added until

SUBMARINE TANKER CONFIGURATION



the ship settles firmly into place on the dock. Sealing rings around the docking cavity are activated and the cavity is pumped dry.

Submarine personnel can now "lock out" of the ship into the cavity and "lock into" the dock to connect cargo and ballast piping and to operate the dockside pumps.

Pumping takes about 24 hours, during which time other submarine tankers may leave or arrive at the other dock.

With the pumping completed, the ship's crew secures the terminal, disconects the piping, reenters the ship, floods the cavity, and releases the sealing rings. The ship can now leave the dock, but the computer will remain in command as long as the submarine is within the controlled area.

Normally, all maneuvers would be computer controlled. But the control boards on the submarine and at the control center would allow for human monitoring and operation in case of any malfunction.

Submarine crews and terminal personnel would be recruited, hired and trained as part of a total submarine tanker system. All prospective employees would have to complete a submarine qualification program and demonstrate their knowledge and abilities.

Sea-shore rotation of crews would provide ample shore time for training. Each submarine would rotate two crews with 42 in each unit.

Training would include programs to jointly exercise submarine and terminal crews in docking and cargo operations. Crews would sharpen their efficiency with at-sea training.

The study group expects opposition to the Arctic submarine transportation system, mainly on the grounds that it has never been tested. They realize that cargo carrying submarines are a far-out idea—but they also are aware that many other innovations were not easily or quickly accepted.

The group pointed out that the consolidated nuclear steam generator design has been supported by the Maritime Administration. However, it has not been approved by the Nuclear Regulatory Commission. "Continued government-industry support of nuclear power plant development is required to insure timely approval," they said.

With oil now flowing through the 800-mile trans-Alaska pipeline, surface tankers already are delivering crude oil to American consumers.

On August 2 the tanker Arco Juneau sailed through the Valdez narrows of Alaska with the first load of North Slope oil, 825,000 barrels of crude destined for a refinery at Cherry Point, Wash.

Off the port side of the ship, the lights of four other tankers, waited their turn to enter the port and load.

The oil is coming from a massive pool beneath the Arctic tundra. Experts say there is enough oil there to help supply American consumers beyond the year 2000.

Less predictable is the type of transportation system that eventually will emerge to transport the crude oil. Only time will tell if the submarine tanker is efficient and feasible. ⚓

Cooperation is the Key

By Linda M. Quinones

Photos by Russ Egnor

Cooperation or competition, which is the key to success?

Both are important though either can be counter productive when over-emphasized. However, when it comes to the working relationship between the Navy's Military Sealift Command and the maritime industry, there is no question that emphasis has been and must continue to be on cooperation.

An excellent example is a managerial innovation given new emphasis by Military Sealift Command—a program that has been successful only because of cooperation between MSC and the commercial carriers. Mutual advantages stemming from temporary MSC release or early redelivery of privately owned ships under command charter have made the program a success from either the industry or MSC viewpoint.

During the 17-month period ending June 1977, MSC returned seven tankers and two dry cargo ships to their owners prior to termination of their charter periods. They were turned back because the transportation capability they represented exceeded sealift requirements of the military services.

By early termination of ship charters or temporary release of chartered ships to their owners for use in carriage of commercial cargo, MSC saved the cost of maintaining the ships in a reduced operating status and the payment of daily charter hire rates. That is a tidy sum—more than $5 million, representing nearly 900 ship days for the tankers alone, and $422,000 for the cargo ships, representing approximately 180 days.

Obviously, commercial carriers generally expected advantages or they would not have been willing to accept early turn-back of a ship, not when they had entered into a charter contract that obligated the command to retain their ship for a specific period or number of voyages.

A primary advantage to the industry stemmed from the condition of the shipping market which allowed the owners to effectively compete for commercial cargo and thus increase their revenues. In addition, for those dry cargo ships that were temporarily released, negotiators for MSC and the industry agreed upon an option that would allow the command to extend each charter by adding on a period which doubled the time the ships were off charter. No such option was negotiated for the tankers.

For MSC, the temporary release of chartered ships or early termination of charters paid management dividends and helped assure that the command could meet its responsibility to provide effective, economical and efficient service to the Army, Navy, Marine Corps and Air Force. Lowering operating costs when lift requirements are below controlled fleet capability and assuring availability of ships when requirements increase is what MSC management is all about.

Ship charters terminated early were those providing for the services of the Overseas Alice, Erna Elizabeth and Eagle Transporter, all tankers. Prior to their termination, all three had taken part in the temporary release program. The early termination of their charters was without penalty to MSC.

Also temporarily released from charter commitments were the tankers Texas Trader, Overseas Valdez, Council Grove and Spirit of Liberty. Chartered dry cargo ships given an opportunity to compete in the commercial trade were the Green Wave and Green Springs.

After temporary release of the

Discussing sealift requirements are from left: Don Dahl, tankers; Frank Hayden, contracting, and Capt. John Scott, operations.

Tanker division director Don Dahl notes that operating costs were reduced by $5 million by the early release of the tankers.

Overseas Alice, Maritime Overseas Corp. secured one cargo of grain and the ship made nine additional commercial voyages to deliver petroleum products. Overseas Valdez, owned by the same company, made a single voyage carrying petroleum products.

SS Texas Trader, owned by American Trading and Transportation Co., made eight commercial voyages, all in the petroleum trade. Hudson Waterways Corporation's Erna Elizabeth made three commercial voyages and Council Grove, owned by International Ocean Transport Co., made two—both in the oil trade.

The Spirit of Liberty, a Keystone Shipping Co. tanker, carried grain on a single voyage and Green Spring and Green Wave, dry cargo ships, also were involved in the grain trade. Both of the Green ships are owned by Central Gulf Lines.

In negotiating the early or temporary release of ships, delivery ports were mutually agreed on by owners and MSC. Other stipulations, such as restrictions on types of commercial cargo that could be carried, were included in the agreements. Frank Hayden, director of the ship charter and services procurement division, and his staff represented MSC in negotiations with the ship owners.

Hayden emphasized that the entire program was possible only because of the cooperation existing between MSC and the industry. "They understand the problem of anticipating Defense requirements over the long term and have been very cooperative," he said.

Commenting on the challenge of

Ship charter director Frank Hayden talks to a ship owner.

maintaining controlled fleet assets to match up with changing requirements, Capt. John Scott, director of MSC operations, noted that overtonnaging in any given period increases the cost of MSC lift of military supplies and equipment. The early ship release program gives MSC managers a flexibility that increases effectiveness of our fleet management, he said.

Among the problems which MSC managers always must consider is the possibility of a slowdown in cargo generation. Military lift requirements can be affected by severe weather—with the last winter being a good example—or by a decrease in consumption of petroleum products, by fluctuating supply patterns, or by anything that disrupts the flow of military cargo to the port areas.

Donald Dahl, director of the tanker division, said several factors contributed to a temporary surplus of MSC tanker capability. A primary one was the Defense Department conservation program which has substantially reduced military fuel consumption. Just as the private consumer winds up paying higher rates when gas or fuel oil sales are reduced, to assure the financial stability of the suppliers, reduced Defense consumption of petroleum products created a potentially costly surplus of MSC-controlled tankers. In the end someone has to pay the cost, the military shippers MSC serves.

MSC must do more than assure availability of ships. Financial management is as important as operational management. Thus, cooperation among MSC staff functions is as vital as command-industry cooperation. "In making a decision concerning the size of the fleet we maintain, financial and operational considerations must be considered as well as the contractual obligations we have to the maritime industry," Captain Scott said.

Commercial companies share the same concerns. In addition, they are profit oriented. Thus, when an opportunity developed which allowed both MSC and commercial carriers to benefit, everyone involved cooperated to develop a program that was responsive to both short and long-term needs.

The success of the early ship release program clearly illustrates that MSC and the shipping industry do place great emphasis on cooperation. As Captain Scott said, "Cooperation is the key to developing and maintaining an effective working relationship between MSC and the industry." ⚓

"Financial management is as important as operational management," says Capt. John Scott, operations chief.

Canadian gate vessel Port Quebec leads convoy from Esquimalt, near Victoria.

Convoy on the Move

By Lt. Cmdr. R. Danner Graves

Clouded skies, made steel gray by the weak rays of an early morning February sun, dissolved into the gray cold of the Pacific Northwest waters. Against this monochromatic backdrop, eight small merchant ships moved slowly out into the channel. Four minesweepers scurried ahead, darting back and forth to protect their brood from unseen dangers. The convoy was on the move.

The word convoy brings memories to many people of World War II Victory Ships and enemy submarines, but it has more current meaning for Naval Reservists in the Seattle area.

U.S. and Canadian Naval Reserve forces conducted Operation Spring Thaw 77, an exercise using reservists from both countries.

The sixth annual Spring Thaw exercise was the biggest yet and included running an actual 11-ship convoy between the two countries. Canada supplied seven reserve ships to serve as the merchant convoy and four active force minesweepers for escorts.

More than 300 reserve and regular Navy personnel from nine U.S. and 12 Canadian units participated. U.S. units included: Naval Control of Shipping Liaison Office 722; Naval Control of Shipping Office 2622; Military Sealift Command 122; Naval Security Group Activity 3522; National Security Group Command and Control 522; Mobile Inshore Underwater Warfare Unit 2122; Naval Reserve Readiness Command, Region 22; 341st Army

Wheelhouse of a gate vessel is a little crowded with four watchstanders.

Ocean Systems Technician 1st Class Gerald Luken charts convoy position.

Security Agency, and 124th Army Reserve Command, 92nd Aviation Co.

Purpose of the exercise was to train reservists in control and protection of merchant shipping during wartime, and to provide experience in use of convoy communications and procedures at sea.

Spring Thaw was unique in several ways:

* It was the largest combined U.S. and Canadian convoy exercise held in recent years.

* It was the only Naval Control of Shipping exercise to combine classroom training and paper maneuvers with actual operation of ships.

* It was planned and executed by reservists but active duty Navy forces also participated.

* It crossed service boundaries and included two Army Reserve units plus assistance by the U.S. Coast Guard.

"Spring Thaw was an example of the best possible reserve training," said Cmdr. John Livingstone, commanding officer of Naval Control of Shipping Liaison Office 722 (NCSLO 722). "It was realistic, exactly what we would be called upon to do in a wartime emergency."

Reservists from both countries spent six months preparing detailed

sailing orders, instructions, convoy routes and actions to be taken in emergencies.

The actual exercise began in Victoria, B.C., on February 25, with a pre-sail conference conducted by Cmdr. A.R. Horner, Canadian Forces Reserve, Naval Control of Shipping Officer, HMCS Malahat. Prior to this, the U.S. and Canadian participants had arrived by commercial and government airlifts.

Canada's commitment to the exercise was demonstrated by the fact that they flew in reservists from as far away as Thunder Bay, 2,000 miles away, and Winnepeg, 1,500 miles distant.

The convoy got under way at dawn from Esquimalt, the Naval Station at Victoria. Five 75-foot basic training vessels (YFPs) and two 125-foot Gate vessels simulated merchant ships of 8 to 15 thousand tons.

Members of NCSLO 722 were on board the ships along with their Canadian counterparts, serving as the convoy advisory staff. Four minesweepers preceded the convoy and conducted random sector anti-submarine warfare screening.

Each merchant ship assumed a position in the convoy dictated by the nature of its simulated cargo. Loading plans prepared by Military Sealift Command Unit 122 then under the command of Capt. Johan A. Dillan, were given to each ship prior to sailing. Commanding officer now is Capt. Jack H. Fox.

An Army Huey helicopter from the 124th Army Reserve Command, 92nd Aviation Co. flew overhead providing air support.

Time enroute was consumed by a variety of simulated situations from ship breakdowns to sightings of enemy ships and submarines. Between convoy exercises, individual reservists worked on watchkeeping and performance checks.

All voice communications between ships were closely monitored both aboard ship and by three security groups using a common field set-up on nearby Whidbey Island. Naval Security Group Activity 3522, National Security Group Command and Control 522 and the 341st Army Security Agency were under the direction of Lt. Cmdr. Clarence Hall.

Arriving at the U.S. end of the first day's convoy, Port Angeles, Wash., the ships were met and boarded by members of Naval Control of Shipping Office 2622. The unit, directed by Cmdr. James Anderson, debriefed the "merchant masters" and compiled ship's data cards.

Convoy movement into the inner harbor was controlled by Mobile Inshore Underwater Warfare (MIUW) Unit 2122, led by Cmdr. Jack Christofferson. The ships were "triangulated" through a theoretical mine field and later that evening underwent a thorough dockside underwater hull search by Mobile Inshore Underwater Warfare 2122 scuba divers. Objects representing time bombs and magnetic mines previously had been planted by Canadian divers.

A debriefing on the day's activities and a pre-sail conference for the northbound return convoy completed the Saturday activities. Individual refresher training was held that evening.

In referring to the large number of Canadian reservists enjoying the attractions of Port Angeles. Commander Horner noted that "Spring Thaw certainly raised havoc with the Canadian balance of payments. It seems the Port Angeles pub keepers ended up with a large amount of Canadian currency on hand."

Sunday's first light found the convoy outbound in two separate groups for another day of exercises. Roles were reversed with the Canadians assuming convoy staff responsibility. Drills and exercises were repeated with each emergency having a new twist to keep the reservists alert.

By 4 P.M. the convoy had returned to the piers of Esquimalt and the reservists were wending their respective ways home.

Cmdr. Karl House of Reserve Readiness Command, Region 22, served as evaluator for the exercise.

"We have been conducting Operation Spring Thaw since 1972 and this was the biggest one by far," he commented. "From a training standpoint it was also the best. Obviously we found areas that needed improvement but that's the whole purpose of the exercises. The training received this weekend was invaluable and it certainly proves that the reservists are capable of performing their assigned missions."

Lt. Cmdr. R. Danner Graves is an executive public relations counselor for Communication Northwest, Inc., Seattle, Wash.

A member of the MSC Naval Reserve Unit 222, Graves is a graduate of Butler University, Indianapolis, and has a master's degree in communications from the University of Washington, Seattle.

He also has worked as a freelance photographer and took some of the photographs accompanying this article.

The last ship in a U.S.-Canadian convoy enters Port Angeles harbor at sunset. The convoy was part of Operation Spring Thaw '77 involving naval reservists from both countries. More than 300 reserve and active duty Navy personnel from nine U.S. and 12 Canadian units participated. The reservists spent six months preparing for the exercise designed to train them in control and protection of merchant shipping during wartime, and to provide experience in convoy communications and procedures. See story page 21.

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